Primary nephrotic syndromes (NS) are defined by proteinuria >3.5 g/d, hypoalbuminemia, hyperlipidemia, and edema, in the absence of underlying systemic disease. They affect individuals of all ages (1). Despite being rare diseases, when present, they impart significant morbidity on patients and their caregivers. NS are chronic medical conditions that are often progressive and can ultimately lead to kidney failure, contributing to the third leading cause of end stage kidney disease (ESKD) in the United States. The cost of these diseases to the health care system, particularly at the kidney failure stage, have been documented to be substantial (2). Few studies have looked at the economic burden of pre-ESKD NS. In one such retrospective, observational cohort study, 844 patients with focal segmental glomerulosclerosis (FSGS) were compared with 1688 matched disease controls using administrative claims data over a 2.5-year period. All-cause health care resource utilization was higher in the FSGS cohort and included outpatient office visits, emergency room visits, inpatient hospitalization stays, skilled nursing facility visits, surgical procedures, prescriptions, and FSGS disease-specific medications. This translated into higher mean total medical costs in the FSGS cohort ($59,753 per patient per year versus $8431; P<0.001), driven mainly by outpatient costs (3).

The study by Simon et al. in this issue of Kidney360 (4) explores the often-forgotten financial burden of NS to patients and their caregivers. The results shed light on the direct (out-of-pocket) and indirect (time and opportunity lost) costs of NS, highlighting the significant monetary ramifications of these diagnoses. This study also exposes potential opportunities for future policy and health care interventions that could mitigate these significant economic stressors. One should commend the authors for leaning on the Kidney Research Patient Advisory Board before embarking on this effort, exemplifying models of successful collaboration between researchers and stakeholders (5).

Adapted and modified from a health economic project assessing the financial and time burden associated with phenylketonuria management (6), two different 240-item paper-based surveys in English were created and mailed to patients with NS in Michigan who were adults (≥18 years of age) or caregivers of affected children (<18 years of age). Target respondents were recruited from nephrology practices, Internet advertisements, electronic study invitations, and Facebook NS support groups within Michigan. Patients with CKD, including those receiving dialysis and post-kidney transplant recipients, were eligible. Twenty-eight adults with NS and 17 caregivers returned the completed survey. The majority of the respondents had private insurance only (78%), 27% had public insurance, 13% had Children’s Special Health Care Services, and one (2%) paid out-of-pocket for all expenses. The results showed a significant annual direct cost burden for adult patients (median=$3464; interquartile range [IQR] $844–$5865) and caregivers (median=$1687; IQR $1035–$4763). Somewhat surprising and noteworthy, the leading cause of financial burden were diet-related costs, which were $1140 (IQR $600–$2400) for adults and $750 (IQR $388–$1008) for caregivers. In parallel, the most significant indirect cost was time spent planning and preparing special meals given the limited availability of ready-made recommended food products, thereby necessitating increased reliance on homemade meals. This effort translated to about 183 hours each year (IQR 114–331 hours) for adults and 173 hours each year (IQR 84–205 hours) for caregivers. Additionally, tasty food options that met the required dietary restrictions were more expensive. This raises the question as to whether our current dietary education policies and practices can be re-evaluated and simplified, perhaps providing patients with more integrated recommendations (recipes, lists of allowable substitutions, and acceptable ready-made foods) rather than just individual restrictions (low sodium, low protein, low phosphorus, etc.). These findings also support ongoing advocacy to combat food deserts and the increased need for user-friendly food product labeling.

Other indirect costs included financial need for medical appointments, travel time, and visiting special services (nutritional counseling, behavioral therapy, social work, etc.). These findings, if confirmed and validated in larger studies, raise the opportunity to explore a multidisciplinary clinic approach for the management of NS as has been successfully done for other chronic illnesses (7–10).
Adults and children reaching ESKD had more direct costs that needed to be borne out-of-pocket than those who had not reached ESKD. Although evaluating the financial burden of NS to patients and caregivers throughout the whole disease severity spectrum is attractive, it may be more informative in the future to separate the ESKD groups undergoing RRT because their needs are much different and conceivably larger. They also may be privy to different supportive services such as social workers through their dialysis units for example.

Perhaps least appreciated, and distinctively highlighted in this publication, are other indirect costs associated with missed opportunities on education (missed school days and premature withdrawal from school) and employment (missed workdays and promotions, and early retirement). In aggregate, 24% of the surveyed cohort reported some untoward consequence on education or employment related to the diagnosis of NS. Given the young age of many patients afflicted with NS and their reliance on caregivers (certainly among the pediatric population), the societal implications and loss of productivity implied by these sacrifices made are tremendous and worthy of more attention in the future.

The importance of financial struggles faced by patients with NS and their caregivers are uniquely captured in this study. There is undoubtedly an unmet need to concentrate our efforts on the dietary management of NS, with an opportunity to create unique tools in the implementation, education, and delivery of specific diets tailored toward individual glomerular diseases. Future studies expanding on the important preliminary findings of this article are paramount. Perhaps the 240-item survey can be further refined, modified, and consolidated to a shorter disease-specific format. This would encourage expanded participation. Additionally, a national and more diverse cohort would be more representative of the patient population, but also of the different state-based health care coverage plans and other resources. This in turn would inform advocacy groups and policy makers to implement interventions geared toward mitigating challenges that NS patients and their caregivers face.

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Author Contributions

D.V. Rizk was responsible for conceptualization, and both authors wrote the original draft of the manuscript and reviewed and edited the manuscript.

References


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